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PARIS
26-29 MARCH
2018

ANNUAL MEETING OF THE SOCIETY FOR TROPICAL ECOLOGY (GTÖ)

CHALLENGES IN TROPICAL ECOLOGY AND CONSERVATION - GLOBAL PERSPECTIVES

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PHYLOGENETIC RELATIONSHIPS IN TWO AFRICAN CEDRELOIDEAE GENERA (MELIACEAE) REVEAL MULTIPLE RAIN/DRY FOREST TRANSITIONS

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Establishing phylogenetic relationships allows investigating how species diversity has evolved in various ecosystems. The genera *Entandrophragma* and *Khaya* contain tree species distributed in different African biomes (lowland rain forest, lowland dry forest, mountain forest), allowing to examine how (single or multiple events) and when the processes of diversification led to biome transitions. Based on the sequencing of plastid genome (pDNA: c. 160,000 bp) and ribosomal DNA (rDNA: c. 7,000 bp) and habitat characteristic data for each species, we have: (1) reconstructed phylogenetic relationships between species and estimated the dates of divergence between the main lineages, and (2) reconstructed ancestral states regarding biome preferences.

The globally consistent phylogenetic tree topologies obtained with both markers in *Entandrophragma* show five main clades that are quite consistent with previously-defined sections based on reproductive characters of flowers. By contrast, in *Khaya,* pDNA and rDNA show divergent topologies, possibly due to a more recent diversification involving incomplete lineage sorting and/or recurrent hybridization events. Two major periods of diversification were highlighted: one for *Entandrophragma* species during the Oligo-Miocene, and a second, during the Pleistocene, concerned both genera at the intraspecific level for *Entandrophragma* and at the interspecific level for *Khaya*. These different diversification periods coincide with three major biomes shifts in *Entandrophragma*. The first habitat transition from rain to dry forests occurred during the Oligo-Miocene and two other transitions were inferred during the Pleistocene, one from rain forest to dry forest and another from rain forest to high altitude mountain forest.